CASE REPORT

Perforated caecal carcinoma masquerading as lower limb necrotising fasciitis: lessons learnt

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SUMMARY

A 69-year-old man was admitted with non-resolving right leg cellulitis. Subsequent skin changes over the calf and discharging pus suggested necrotising fasciitis. After several wound debridements of the leg and imaging, the patient was found to have an iliopsoas abscess due to a metastatic perforated caecal tumour extending along the medial thigh to the calf. No micro-organisms indicative of typical necrotising fasciitis were isolated from the wound. The patient had an ileocaecal resection, and his leg was reconstructed with a split thickness skin graft. He continues to do well postoperatively. This case highlights key lessons when dealing with an unusual presentation leading to challenges in diagnosis such as: (1) the need for good interspecialty liaison, (2) prompt senior review and plan, and (3) 'thinking outside the box' when faced with a diagnostic challenge.

BACKGROUND

Necrotising fasciitis is an uncommon condition that is clinically diagnosed but can present with vague signs and symptoms. Presentation can vary from a rapid fulminant pattern with florid clinical signs such as skin bullae and surgical emphysema to a more subtle onset and progression. However, the price for a delay in diagnosis is a mortality rate of up to 70% directly correlated with a delay in surgical debridement.¹ Early involvement of specialists and a multidisciplinary management plan including an early surgical opinion is imperative. This case highlights the difficulties distinguishing between differential diagnoses of necrotising fasciitis. There are many learning points from this patient's journey from presentation to eventual diagnosis of perforated caecal carcinoma which presented with features initially suggestive of necrotising fasciitis.

CASE PRESENTATION

A 69-year-old man was admitted under medical care via a general practitioner referral for cellulitis, having been previously well and active. He had an episode of loose stools 2 weeks previously and gradually increasing pain in his right leg and thigh, with pain on walking. There was no relevant family or travel history. Over the day prior to admission, the patient developed a red, warm right calf with pain on weight bearing. Clinical signs included tenderness and warmth over the calf, mild oedema, erythema tracking proximally to the thigh. The thigh was swollen, making it difficult to examine the groin lymph nodes. There was no abdominal

tenderness. The admission CRP of 333 mg/L and white cell count (WCC) of $21.85 \times 10^9/L$ suggested an acute infection. A chest X-ray showed a slight opacity of the right lower lobe; however, the chest was clear on auscultation. Urine dipstick was clear. A diagnosis of cellulitis was made with a need to exclude deep vein thrombosis with imaging. Both intravenous antibiotics and therapeutic heparin were started.

The following day, a duplex ultrasound scan ruled out deep vein thrombosis and showed enlarged groin lymph nodes in keeping with infection therefore therapeutic heparin was stopped. Full repeat bloods showed an improvement of inflammatory markers with intravenous antibiotics and also showed a microcytic anaemia. Five days from admission, an abdominopelvic CT scan was performed due to a growing clinical concern of a possible psoas abscess as the patient displayed pain on walking. A large loculated iliopsoas abscess from L3/4 into the right adductor muscle was identified associated with a possible caecal mass and localised perforation. General surgical review found no abdominal signs on examination and requested ultrasound-guided percutaneous drainage.

INVESTIGATIONS

MRI showed extensive pus in the thigh and calf with muscle integrity and no osteomyelitis.

TREATMENT

On day 9 of admission, the patient deteriorated with necrosis of the medial calf skin (over a 2% body surface area) and copious pus leaking from the leg. He was urgently taken to the theatre and the leg was debrided by the orthoplastic team (figure 1). He was counselled about the possibility of leg amputation. Approximately, 900 mL of frank pus was drained and the muscles all appeared healthy. The microbiology and histology results did not reveal any necrotising fasciitis-like process but showed anaerobes and skin flora from the first intratheatre debridement.

After a further three-staged surgical debridement, another CT scan was requested (figure 2 and 3) which suggested thickening of the terminal ileum, caecum and appendix in keeping with the carcinoma. The right lower limb sepsis was due to retroperitoneal perforation of a tumour (figure 4). In light of this finding, the original lung opacity seen on the day of admission screening chest X-ray was thought to be possible metastasis. A further

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Figure 1 Right leg medial calf wound and exploratory medial thigh wound from first debridement dressed with vacuum-assisted closure dressing.

CT thorax did reveal this to be a solitary lung metastasis. The patient was informed of the diagnosis and following colorectal MDT discussion, a palliative and limited ileocaecal resection and ileostomy was performed on day 23. Once the infection had resolved, the lower limb skin defect was reconstructed with a split-thickness skin graft after the palliative procedure.

OUTCOME AND FOLLOW-UP

The patient is currently well at home and continues to be under the care of the general surgeons for his tumour care.

DISCUSSION

In current literature, there are three documented cases of true leg necrotising fasciitis caused as a result of caecal carcinoma perforation.²⁻⁴ Furthermore, there is another case of a perforated caecal carcinoma causing a psoas abscess and tracking to cause gluteal cellulitis.⁵ This highlights the rarity of this diagnosis. A literature review of perforated caecal carcinoma presenting with leg symptoms showed a case of presentation with thigh emphysema⁶ and a thigh abscess.⁷ This case report appears to be the first case of a perforated caecal tumour presenting as a calf abscess which could

Figure 2 Wounds with removal of vacuum-assisted closure dressing at second debridement.

Figure 3 Calf wound after debridement and washout.

be explained by a late presentation to hospital and prolonged treatment with antibiotics, prior to diagnosis, therefore a more distal tracking of the collection. This case highlights the difficulty in diagnosis of both necrotising fasciitis and the underlying true pathology, perforated caecal tumour. The Laboratory Risk

Figure 4 Abdominopelvic CT scan with contrast showing caecal perforation with right iliopsoas extension.

Indicator for Necrotizing Fasciitis score helps to differentiate between cellulitis, abscesses and necrotising fasciitis.⁸ A score of 6 or more shows a positive predictive value of 92% and negative predictive value of 96%.⁹ However, in our case, according to the diagnostic criteria, the patient would have scored a 6 due to a raised C-reactive protein (CRP) of >150 mg/L (four points), WCC between $15 \times 10^9/L$ and $25 \times 10^9/L$ (one point) and haemoglobin between 11 and 13.5 mg/dL (one point). This highlights the ambiguity of the diagnosis in this case.

However, when analysing the presentation of the patient, factors refuting the diagnosis of necrotising fasciitis include low-grade fever, haemodynamic stability and a systemically well patient throughout admission. When scrutinising the history, the patient gives an account of one episode of bowel change preceding leg pain. This along with a microcytic anaemia could have prompted colorectal tumour-specific investigations, despite no signs or symptoms. A simple psoas sign clinically would have also pointed towards a diagnosis of an abscess earlier especially when there was clinical suspicion. It is easy to perform and could be elicited by the bedside. This sign is elicited by placing a hand just above the knee and asking the patient to lift the thigh against resistance or by lying the patient on the contralateral non-painful side and extending the hip. This is a highly specific sign (95%) but lacks sensitivity (16%) and is positive if pain is felt as the iliopsoas hip flexors become irritated.¹⁰

Another diagnostic pitfall in this case was the lack of recognition of the caecal mass on the initial CT scan which is less sensitive to MRI in diagnosing an intra-abdominal mass with more accurate delineation of inflammation beyond the abscess site.¹¹ After surgical evacuation of the pus, a repeat CT revealed better delineation of the exact anatomical relationships as it is often extremely difficult to differentiate a tumour mass from an abscess or haematoma on imaging alone.¹² Abscesses may appear as low signal intensity on non-enhanced T1-weighted MRI and as high signal intensity on non-enhanced T2-weighted MRI; however, both are non-specific findings and indistinguishable from lymphoma or metastases.¹²

A plastic surgeon's role in dealing with sepsis is clear particularly in the context of necrotising fasciitis or toxic shock syndrome in burns. In November 2015, British Association of Plastics, Reconstructive and Aesthetic Surgeons (BAPRAS) released a press statement to show support of plastic surgeon's role in reducing the morbidity and mortality from sepsis having looked at the National Confidential Enquiry into Patient Outcome and Death data on sepsis management.¹³ The professional body recognised that plastic surgeons should play a role both acutely and in the late reconstruction stage within a multi-disciplinary team. A sepsis protocol was followed very well by the admitting medical team which helped alleviate some of the infective symptoms; however, there was some delay in the recognition of the need for surgical intervention and effective escalation to the surgical team.

In the presence of diagnostic uncertainty, cross-specialty communication can lead to faster diagnosis, but can also be hampered by lack of clinic 'ownership' and decision-making. This could have been fatal in a true case of necrotising fasciitis

or could have led to severe morbidity due to a need for more proximal leg amputation. Hence, the lesson to learn here is to maintain good interspecialty relationships in order to work efficiently and ensure excellent interteam communication.

Learning points

- ▶ Necrotising fasciitis is a complicated diagnosis to make even for experienced surgeons.
- ▶ Uncommon conditions may present in uncommon ways and therefore take note of clues in the history, examination and investigative findings.
- ▶ A good interspecialty relationship is key to the prompt management of complex cases.
- ▶ Early senior review may help with complex diagnoses.

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